



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,661	07/17/2003	Andrew Harvey Barr	200308575-1	2056

22879 7590 02/22/2006

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
----------	--------------

2841

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/621,661

Applicant(s)

BARR ET AL.

Examiner

Jeremy C. Norris

Art Unit

2841

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 9-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 9-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6-13-05 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 9-12, 15, 17-22, 24-27, 30, 32-34 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,501,181 (Albinsson).

Albinsson discloses, referring primarily to figure 4b, a printed circuit board comprising: a conductive layer (402); a via (405) transecting the conductive layer; and an anti-pad around the via, the anti-pad comprising a pattern of conductive material (404) having a plurality of voids, wherein the pattern of conductive material is electrically isolated (col. 6, lines 40-45) [claim 1] wherein the pattern of conductive material is configured to maintain planarity of the printed circuit board (col. 2, lines 50-65) [claim 2], wherein the pattern of conductive material is configured to prevent settling of dielectric material in the printed circuit board near the via [claim 3], wherein the via is configured for data transfer rates greater than approximately 2 GHz. (col. 2, lines 35-45) [claim 4], wherein the pattern of conductive material is configured for data transfer rates through the via greater than approximately 2 GHz. (col. 2, lines 35-45) [claim 5], wherein the pattern of conductive material is substantially circular in shape (col. 6, lines 25-35)

[claim 6], wherein the conductive layer comprises a power plane [claim 9], wherein the conductive layer comprises a ground plane (col. 6, lines 1-35) [claim 10], wherein the pattern comprises a symmetric pattern (col. 6, lines 25-35) [claim 11], wherein the pattern comprises an asymmetric pattern (figure 4b) [claim 12], wherein the pattern comprises an arbitrary pattern [claim 15].

Similarly, Albinsson discloses, a printed circuit board comprising: a conductive plane (402); a via signal barrel (405) transecting the conductive plane; and an anti-pad between the conductive plane and the via signal barrel, the anti-pad having a pattern of conductive material (404), wherein a signal cannot be transmitted between the conductive plane and the via signal barrel and wherein the pattern of conductive material is electrically isolated (col. 6, lines 30-55) [claim 17], wherein the pattern of conductive material includes a plurality of voids [claim 18], wherein the anti-pad is configured to maintain planarity of the printed circuit board (col. 4, lines 25-65) [claim 19], wherein the anti-pad is configured to minimize stray capacitance between the via and the conductive plane (col. 3, lines 20-60) [claim 20], wherein the anti-pad is configured to prevent settling of dielectric material in the printed circuit board adjacent the via signal barrel [claim 21], wherein the conductive plane comprises one of a power plane and a ground plane (col. 6, lines 30-55) [claim 22].

Additionally, Albinsson discloses, a method for forming a printed circuit board, comprising: forming a conductive plane (402); forming a via signal barrel (405) transecting the conductive plane; and forming a partially voided anti-pad between the conductive plane and the via signal barrel, wherein the partially voided anti-pad is

electrically isolated (col. 6, lines 30-55) [claim 24], wherein the conductive plane comprises one of a power plane and a ground plane (col. 6, lines 20-55) [claim 25], wherein the partially voided anti-pad is formed to maintain the planarity of the printed circuit board (col. 4, lines 25-65) [claim 26], wherein the partially voided anti-pad is formed to minimize stray capacitance between the via and the conductive plane (col. 3, lines 20-60) [claim 27], wherein the pattern comprises one of a symmetric pattern and an asymmetric pattern (figure 4b, col. 6, lines 25-35) [claim 30], wherein the pattern comprises one of an arbitrary pattern and a random pattern (figure 4b) [claim 32], wherein the anti-pad is substantially circular in shape (col. 6, lines 25-35) [claim 33], wherein the via signal barrel is substantially circular in shape (figure 4b) [claim 34].

Claims 35-37 rejected under 35 U.S.C. 102(e) as being anticipated by US 6,710,258 B2 (Oggioni).

Oggioni discloses, referring primarily to figures 2a & b, a printed circuit board (120) comprising: a conductive layer (210b); a via (145) transecting the conductive layer; and an anti-pad around the via, the anti-pad comprising a pattern of conductive material (220b) having a plurality of voids, wherein the pattern comprises an asymmetric pattern (col. 6, lines 5-15) [claim 35].

Similarly, Oggioni discloses a printed circuit board comprising: a conductive layer (210b); a via (145) transecting the conductive layer; and an anti-pad around the via, the anti-pad comprising a pattern of conductive material (220b) having a plurality of voids, wherein the pattern comprises a concentric circles pattern (col. 6, lines 5-15) [claim 36].

Moreover, Oggioni discloses, a printed circuit board comprising: a conductive layer (120); a via (145) transecting the conductive layer; and an anti-pad round the via, the anti-pad comprising a pattern of conductive material (220b) having a plurality of voids, wherein the pattern comprises a screen pattern (col. 6, lines 5-15) [claim 37].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 2841

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13, 14, 16, and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Albinsson.

Albinsson discloses the claimed invention as described above except Albinsson does not specifically state that the pattern comprises a concentric circles pattern [claim 13], wherein the pattern comprises a radial spokes pattern [claim 14], wherein the pattern comprises a screen pattern [claims 16, 31]. However, the Examiner takes Official Notice that it is well known in the art to comprise conductor patterns in each of these shapes. Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to form the conductive pattern in the invention of Albinsson in any of the above shapes. The motivation for doing so would have been to provide a shape that fit the contours of the board as well as providing the required shielding. Moreover, it has been held that more than a mere change of form is necessary for patentability. *Span-Deck, Inc v. Fab-con, Inc.* (CA 8, 1982) 215 USPQ 835.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Albinsson in view of Oggioni.

Albinsson discloses the claimed invention as described above except Albinson does not specifically state that the conductive plane comprises copper. However, it is well known in the art to comprise conductive planes of copper as evidenced by Oggioni

Art Unit: 2841

(col. 3, lines 50-60). Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to comprise the conductive plane in the invention of Albinsson of copper as is known in the art and evidenced by Oggioni. The motivation for doing so would have been to provide a relative inexpensive yet highly conductive material. Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 28 and 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Albinsson in view of US 5,844,146 (Murray).

Albinsson discloses the claimed invention except Albinsson does not specifically state that, wherein the partially voided anti-pad is formed by removing conductive material from the conductive plane in a pattern [claim 28]. However, it is well known in the art to form voids in a conductive pattern by removing material, especially by using an etching process [claim 29] as evidenced by Murray (col. 9, lines 1-10). Therefore it would have been obvious to one having ordinary skill in the art at the time of invention to form the voids in the invention of Albinsson by etching the conductive pattern as is known in the art and evidenced by Murray. The motivation for doing so would have been to use a known process with a high degree of control to avoid unwanted conductor removal.

Response to Arguments

Applicant's arguments with respect to claims 1-6 and 9-34 have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments filed 25 November 2005, regarding claims 35-37 have been fully considered but they are not persuasive. Applicants contend, "Oggioni teaches away from asymmetry and does not teach or suggest a pattern that comprises an symmetric pattern. But as Applicants have pointed out, Oggioni specifically teaches that it is not necessary for the rings to be completely closed around the via hole. A break in the ring would indeed teach and suggest a pattern that is asymmetric. Applicants additionally allege, "Oggioni is silent with regard to the pattern comprising a concentric circles pattern". However, the pattern of material and voids includes the conductive circular ring and the concentric circular voids as well. Therefore, Oggioni does indeed disclose a concentric circle pattern. Moreover, Applicants argue, "while Oggioni uses the term "mesh" to describe the shielding structure, it is clear that the use of the term is not referring to a screen pattern". However, neither Applicants nor Oggioni have provided any special meaning to the words "screen" and "mesh". Therefore, the Examiner is required to give the words their plain meaning. In plain usage, the words "screen" and "mesh" are interchangeable. Thus, since Oggioni explicitly discloses a "mesh" it is clear that Oggioni discloses a screen pattern.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

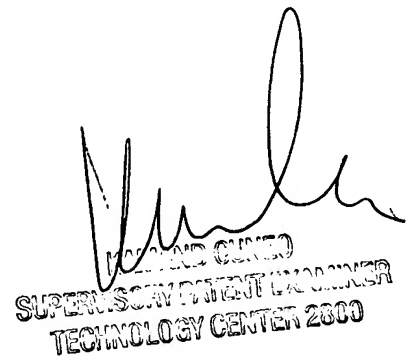
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 571-272-1932. The examiner can normally be reached on Monday - Friday, 9:30 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on 571-272-1957. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2841

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JCSN



Handwritten signature: [Signature]
OFFICIAL CENTER
SUPERVISOR OF PATENT EXAMINERS
TECHNOLOGY CENTER 2800